

2.—Sellaite from near Patterson Range: A New Occurrence

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The discovery of sellaite (magnesium fluoride) in Western Australia is recorded. Its properties and occurrence with fluorite of octahedral habit in veins in gneiss are described.

A sample of fluorite, sent to the Government Chemical Laboratories by Mr. J. Stuart of Napier Downs for determination, was found to contain small quantities of the rare mineral sellaite (magnesium fluoride). This is the first recorded occurrence of the mineral in Western Australia.

The sellaite occurs in the fluorite as highly irregular veins with a maximum width of about a centimetre. Both minerals are coarsely crystallized, the sellaite having a maximum grain diameter of about 0.5cm., the fluorite of several centimetres. The fluorite is said to come from a locality "10 miles north of the trig. station on Paterson's Range." The trig. station referred to is probably that at 17° 03'S., 124° 38'E. Of the field occurrence it is said "The deposit is about 20 ft. long and at its widest one foot. It is in a belt of gneiss and schist running along the top of a granite range. The gullies of either side of the range carry tin and a little scheelite."

The sellaite is white to colourless, with occasionally a purplish tinge, and has two fair cleavages at 90° parallel to the vertical axis. Under shortwave ultra-violet light it shows very patchy pale yellow and pink fluorescence and after irradiation for one minute shows a general pale green phosphorescence lasting up to 15 seconds. Under longwave ultra-violet light it shows a bright even blue fluorescence with a few pinkish spots and a phosphorescence similar to that caused by the shortwave light. Bright thermoluminescence starts between 400°C. and 500°C. and is followed by violent decrepitation. The density of two fragments was 3.158 ± 0.005 g./cc. and 3.147 ± 0.005 g./cc. respectively and the hardness 5. It is soluble in hot concentrated sulphuric acid with the evolution of hydrofluoric acid. The mineral is uniaxial positive with $n_o = 1.378 \pm 0.001$ and $n_e = 1.389 \pm 0.001$.

Minerals associated with the sellaite include the following:—

Fluorite, the main mineral of the vein, is mostly green, but white, colourless, purple and limonite-stained portions are present. Its optical and physical properties are those usual for

fluorite. The crystal habit, where developed, is that of the distorted octahedron which probably indicates crystallization at a higher temperature than that of the more common cubic habit (Drugman, 1932). Fluorescence and phosphorescence are almost identical with those of the sellaite. Thermoluminescence is probably a little brighter, starting at a slightly lower temperature, and decrepitation a little more violent.

Chlorite, occurs only on the extreme edges of the vein and probably belongs to the country rock rather than the vein. It is pale green in colour, uniaxial positive or biaxial with a very small optic axial angle and has an intermediate refractive index of 1.607 ± 0.003 .

Muscovite, occurs only with the chlorite. It is biaxial negative with an optic axial angle of about 30° and an intermediate refractive index of 1.600 ± 0.003 .

Quartz; small masses of prismatic crystals were included in the sample. Since these were associated with the chlorite-muscovite assemblage it may be assumed that these also came from the margin of the vein.

Hematite, occurs associated with the quartz as small masses showing external crystal form.

An effort was made to obtain further specimens but a second sample from the same locality contained only traces of the sellaite. It may therefore be assumed that the distribution of the sellaite in the vein is patchy.

A sample of white fluorite from a locality described as "nearby" is of interest in that it contains no sellaite, and in that the fluorite of this sample shows very little phosphorescence. This deposit is said to be "30 ft. long and 2 ft. 6 in. wide and in slate near a dolerite hill".

Reference

Drugman, J. (1932).—Different Habits of Fluorite Crystals. *Miner. Mag.*, 23; 137-144.

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